

CLAIMS

1. An electromechanical filter comprising:
 - a first member physically changing as a result of input of a signal; and
 - 5 a second member, arranged spaced by a predetermined interval from the first member, detecting physical change of the first member when a signal of a predetermined frequency is input to the first member.
- 10 2. The electromechanical filter according to claim 1, wherein:
 - the first member has a symmetrical structure with respect to a center axis of the first member, and oscillates as a result of input of a signal; and
 - 15 the second member detects oscillation of the first member when a signal of a predetermined frequency is inputted to the first member.
3. The electromechanical filter according to claim 1,
20 wherein one of the first member and the second member is a wall-shaped member covering the other one of the first member and the second member.
4. The electromechanical filter according to claim 1,
25 further comprising:
 - an input side electrode connected to the first member causing the first member to be excited by inputting a

signal to the first member; and

an output side electrode connected to the second member, outputting a signal of the same frequency as the signal inputted to the first member when the second member
5 detects oscillation of the first member.

5. The electromechanical filter according to claim 1, further equipped with an input side electrode arranged spaced by a predetermined interval from the first member,
10 causing the first member to be excited as a result of input of a signal,

wherein the second member is an output side electrode outputting a signal of the same frequency as the signal inputted to the first member when the second member detects
15 oscillation of the first member.

6. The electromechanical filter according to claim 1, wherein the second member is a wall-shaped member covering the first member, and further comprises:

20 an input side electrode connected to the second member, causing excitation of the first member as a result of input of a signal to the second member;

an electrode, connected to the first member, applying a voltage to the first member, and

25 an output side electrode connected to the second member, outputting a signal of the same frequency as the signal inputted to the first member while the second member

detects oscillation of the first member.

7. The electromechanical filter according to claim 1,
wherein at least the first member of the first member
5 and second member is composed of a substance formed through
self-assembly containing carbon nanotube, carbon
nanohorn, or fullerenes, and the predetermined interval
is a microscopic gap formed by self-assembly by at least
the first member.

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8. The electromechanical filter according to claim 1,
wherein at least the first member of the first member
and the second member is composed through growth using
catalyst material and is connected to an electrode section
15 composed of electrode material containing the catalyst
material.

9. The electromechanical filter according to claim 1,
wherein the first member and second member are constituted
20 by a complex composition including substances ion-doped
into a carbon nanotube and substances containing other
atoms and molecules.

10. The electromechanical filter according to claim 1,
25 wherein the first member and the second member are formed
artificially using fine-processing technology.

11. The electromechanical filter according to claim 1,
wherein physical change of the first member comprises
oscillation, and detection of oscillation of the first
member is carried out by detecting tunnel current flowing
5 between the first member and the electrode using a probe
connected to the electrode outputting the signal inputted
to the first member.

12. The electromechanical filter according to claim 1,
10 with physical change of the first member comprising
oscillation, and further comprising an adjustment section
causing the predetermined interval between the first
member and the second member to change, and causing
resonance frequency of the first member to change.

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13. An electrical circuit including a filter bank
employing the electromechanical filter according to claim
1.

20 14. Electrical equipment having the electrical circuit
according to claim 13.